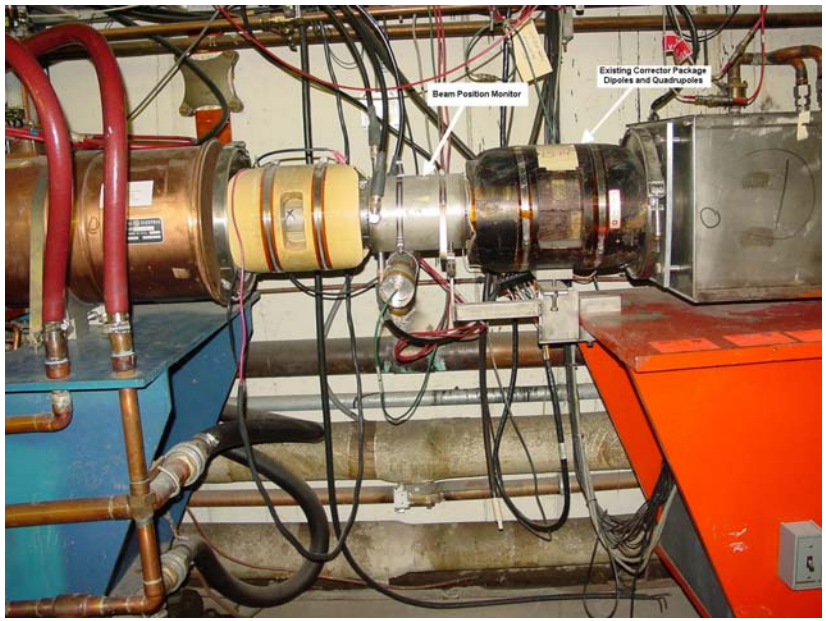
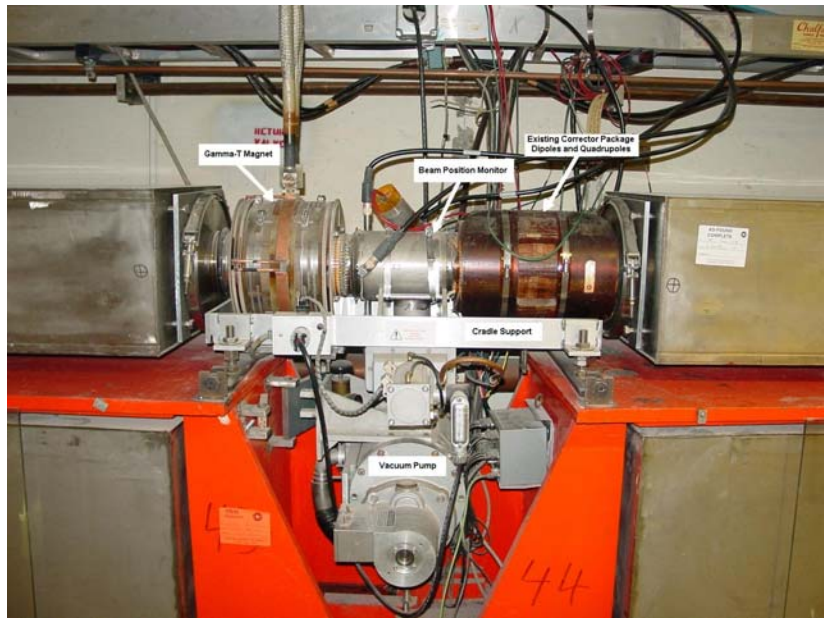
New Booster Correctors

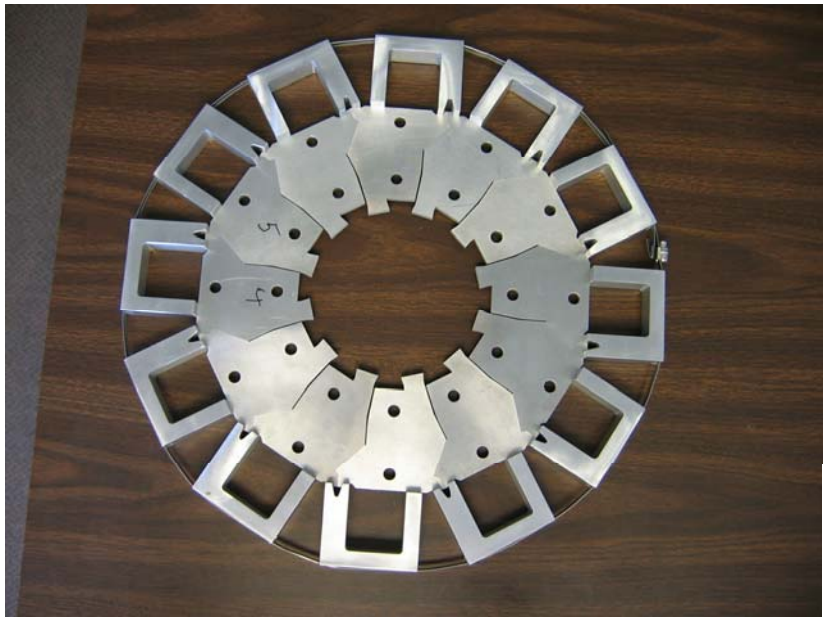


Booster Long Period 14



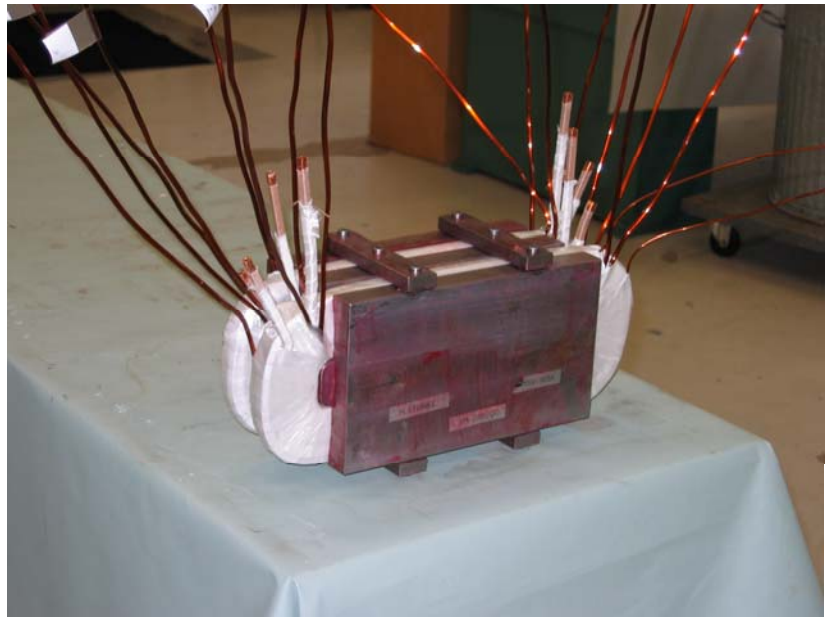
Booster Short Period 22

New Booster Correctors



Magnet cross section

This is a prototype,which was done to check the magnet assembly tooling.



Two coils (prototypes) in the curing mold.

Coils in the real magnet shall be installed as tight, as in the curing mold

Alexander Makarov, Tech Div.

New Booster Correctors

Corrector Magnet Parameters

Magnet Parameter	Horz. / Vert. Dipole	Normal Quad	Skew Quadrupole	Normal / Skew Sextupole
Integrated Field	0.0175 T-m	0.094 T-m / m	0.0275 T-m / m	1.48 T-m / m^2
Maximum Peak Current	50 Amp	50 Amp	5 Amp	50 Amp
Integrated Field per Amp	87.5E–6 T-m / Amp	1.88E-3 T / Amp	5.5E-3 T / Amp	29.6E-3 T / m / Amp
Maximum Field Slew Rate	3.5 T-m / Sec	160 T / Sec	0.8 T / Sec	2,279 T / m / Sec
Magnet Inductance	7,840 μH	1,104 μH	6400 μH	1,760 μH
Magnet Resistance	0.27 Ohms	0.166 Ohms	0.35 Ohms	0.187 Ohms
Maximum Magnet Voltage, $V = L\,(dI/dt) + I\,R$	+/-92 Volts	+/-102 Volts	2.7 Volts	+/-145 Volts

New Booster Correctors

AIP Cost Issues

Full Corrector Installation

- New corrector magnet packages in all Long and Short Sections
- 48 new magnet packages
- 288 new power amplifiers and associated power cables.
- 72 new CAMAC power amplifier controllers
- 24 new racks distributed among 6 locations in the Booster gallery.

Cost with 30% Contingency = $5,910,000.00

New Booster Correctors

AIP Cost Issues

Partial Corrector Installation – Option 1

- New corrector magnet packages in all Long and Short Sections
- Reuse current Sextupoles in the Long Sections
- Reuse current Dipoles and Quads in the Short Sections
- Power new Dipoles and Quads in the Long Sections
- Power new Sextupoles in the Short Sections

* Hence Install only half of the new power amplifiers

Cost with 30% Contingency = $5,040,000.00

New Booster Correctors

AIP Cost Issues

Partial Corrector Installation – Option 2

- New corrector magnet packages in all Long ***OR*** Short Sections
- Make only half the number of magnets
- Install only half of the new power amplifiers

Cost with 30% Contingency = $4,020,000.00

Current Action Towards A Decision

- Investigating possible conservative estimates with high contingencies.

New Booster Correctors

AIP Cost Issues

Current Action Towards A Decision

- Investigating possible conservative estimates with high contingencies
- Making efforts to quantify benefits to Booster for partial corrector installation options
- Settling on an approach in 1 week